RURAL INDIA

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"Salvation of India lies in Cottages."

—*MAHATMA GANDHI*

A MEMORABLE VISIT

THE five days visit of the President Eisenhower to New Delhi was a significant political event since Independence which has brought the two largest democracies of the world—India and America—closer to each other. It has not only strengthened the mission of 'world-peace and good will' undertaken by the American President, but also united the two democracies to follow peaceful methods in settling national and international disputes. The bond of shared ideals between India and America forged by this visit will, in years to come, prove a formidable bastion of democracy against growing Communist threat to the free world.

Aggressive Chinese Designs

What aroused unprecedented enthusiasm among the people and lent special warmth and interest in India's reception to the American President were obviously the prospects of increasing financial aid to complete India's Development Plans and armed support of America in the event of a war with China. Despite obvious leanings of the ruling party and its topmost leaders towards the Communistic block, recent Chinese incursions on eastern Indian border have rudely shaken the country's faith in Communistic professions of friendship and their make-belief acceptance of Panchsheel. The challenge posed by the warlike intentions of China has awakened the country to the grim reality of seeking friendship and support in quarters other than the Communistic block including Russia. That explains the country's change of attitude towards America and the unprecedented interest shown in the visit of the American President.

Lasting Results

Unlike visits of foreign dignitaries to this country in the past, the visit of the American President is pregnant with great possibilities of mutual co-operation and helpfulness between India and America to the peace and progress of the world. In his own characteristic way, Mr. Eisenhower has given expression of the mutual advantages accruing to the two countries as a result of this new bond of friendship when he is reported to have stated in the course of his numerous speeches during his visit to this country. Relevant excerpts from his speeches bearing on Indo-American relations in future are worth reproduction:—

"I bring to this nation of 400 million assurance from my own people that they feel the welfare of America is bound up with the welfare of India America shares with India the deep desire to live in freedom, human dignity and peace with justice."

"We of these two nations believe, there are greater things in the world even than peace. They

are the ideals, the hopes and aspirations of humanity, our loyalty to conscience. They are the integrity of purpose, unswerving devotion to principle, love of truth and decency. People who believe and practise these things are certain to be friends".

"Between the largest democracy on earth, India, and the second largest, America, lie ten thousand miles of land and ocean. But in our fundamental ideas and convictions about democracy, we are close neighbours. We ought to be closer. We must know each other better; we must trust each other more; we must support each other".

"One thing I assure you, from now on I shall be quick to assert on every possible occasion that India is becoming one of the great investment opportunities of our time—an investment in the strengthening of freedom, and in the prosperity of the world".

Coming as they do from the head of the richest and the most powerful nation of earth, these are significant and historic words indeed. They are symbolic of the magnanimity of heart embracing the welfare of the entire world-community and transparent sincerity of purpose that a man of God Mr. Eisenhower is. Words full of utmost sincerity and crusading spirit for world-peace must of necessity find spontaneous and enthusiastic reciprocation of feeling in the Indian soil.

Nothing since Independence has contributed so much to bring India and America nearer as the five days visit of the President Eisenhower to this country. And the prospects of this historic visit of the American President to the financial and defensive strength of this country in years to come appear to be most hopeful and assuring.

FUNCTIONS OF RURAL LEADERS

By: TAKHAT SINGH SOHAL

IN the recent past, there has been considerable enthusiasm for training rural leaders under the programme of Community Development. The results achieved, when viewed in terms of the camps held and the leaders trained all over the country, are very encouraging. Momentum gained through these pioneering attempts are sought to be maintained by making leadership development a recurring feature of the whole programme.

Further experience in holding such training programmes is sure to eliminate the deficiency that characterised the earlier attempts. It is, however, universally recognised that all this labour will be worth the effort only if a sincere thought is given to the proper utilisation and involvement of these leaders in programmes of community development.

It appears as if there is still a lack of knowledge of the manners rural leaders could assist in furthering developmental activities. This knowledge also seems to suffer from complacency, and a comprehensive narration of the functions of village leaders is considered by some, to be of academic interest only. It can be safely asserted that the efficiency of village leaders can be considerably enhanced if all the functions that they are capable of performing are clearly understood. In fact, the conviction of an extension worker for developing and utilising leaders is sure to be strengthened strictly in proportion to his realisation and understanding of what can be achieved through village leaders.

It is, with this end in view that the following functions of rural leaders are itemised below :—

1. *First-Foot-hold.* Village leaders are the most appropriate point for a beginner to make his first contact in the village.

2. *Introducer.* Once in touch with genuine leaders, the worker can confidently utilise them in introducing himself to the whole of the community.

3. *Legitimizer.* In several programmes, social or moral sanction of the true leader proves a boon for their speedy adoption. Once the activity is endorsed by their leader, there are better prospects of its being adopted by the followers.

4. *Informant.* The village leaders are greatly helpful in collecting vital statistics about the community. Some items of unrecorded data can be had from them only.

5. *Planner.* There is no substitute for involving the leaders in planning village programme. By so doing, the programme gets the quality of being that of the people and carries an implicit assurance of people's participation.

6. *Executor.* By virtue of their position and other unique qualities, village leaders can be entrusted a part of the programme for execution. The facilities available with such leaders can be counted upon as a part of the village contribution.

7. *Multiplier.* By providing a helping hand in spreading the activities of development worker, the village leaders are an indispensable asset.

8. *Mobilizer.* The village leaders are usually the most effective persons in mobilising the people for mass scale participation in projects of public utility.

9. *Catalyst.* Village leaders act as catalyst in the development of communities. The process and speed of development is considerably hastened by their presence.

10. *Demonstrator.* More often than not, village leaders are the most suitable persons for arranging a demonstration. They are more co-operative and capable of incurring any additional cost involved in it. They can also be taken into confidence while holding the demonstration. In case a demonstration does not succeed for one reason or the other, village leaders are more amenable to accept the cause of failure.

11. *Resource person.* Village leaders are usually very effective in securing external aid for the community. They can exploit their social status and personal influence in obtaining assistance available from outside.

12. *Risk-taker.* The economic position of a majority of leaders is usually more sound than of anordinary villager. They are also, on the whole, more enterprising. They can, thus, be persuaded to undertake some activities for the benefit of the village. As for instance, they can be motivated to stock fertilizer or improved seeds, start brick kiln, etc.

13. *Group Representative.* Village leaders are very effective interpreters of the needs and aspirations of the people. Where such leadership is lacking, village people are at a great disadvantage in communicating the needs of the community.

14. *Arbitrator.* When they act impartially and carry the confidence of belligerants, village leaders are the most successful arbitrators of village disputes. More important than their arbitrations, is the facility they have in knowing and even anticipating the correct source and seat of trouble. True leaders can off-set these situations by foreseeing them.

15. *Perpetuator.* Instances can be readily multiplied and are well within the knowledge of every worker where projects initiated and completed by the people themselves through an outside stimulous fail to survive for want of local leadership. In case some thought is given to assign the responsibility of their maintenance to a trusted leader, such happenings can be eliminated.

A cursory perusal of the above functions would support the belief that local leaders are indispensable in initiating, executing and perpetuating programmes of rural development. It can be assumed that the present apathy of some workers towards leaders is partly attributable to an abject ignorance of these workers to their hidden potentialities. There is every reason to believe that local leaders can provide much greater impetus to developmental programmes in case their functions are thoroughly grasped.

NEED OF FARM MANAGEMENT EXTENSION IN INDIA

By: JAI KRISHNA[1] & Dr. S. P. DHONDYAL[2]

THE growing realisation of the importance of application of the principles of agricultural economics to farm conditions has been well in evidence for some time in our agricultural programmes. But the main emphasis has largely been centered around those activities which were broadly connected with *macro aspect* of our farm economy, where the unit of analysis may bring within its orbit the whole country, state or even a village depending upon the nature and scope of the problem. The main concern of macro-analysis is the employment of resources to best possible advantage. The first and second Five-Year Plans can be cited as examples of the application of agricultural planning at macro-level where the national economy of the country as a whole was taken into consideration. The agricultural economists were largely concerned with this aspect of planning.

The other aspect of agricultural economics dealing with *micro-analysis* has not so far received the attention due to it. Under this sphere, the basic unit of analysis is the individual firm or farm, where the primary consideration is the efficient allocation of scarce resources amongst alternative uses. In this connection, it may be pointed out that the concept of the unit of micro-analysis is a relative term. A village as a whole may be taken as a unit of micro-analysis in relation to planning at the district level and a district to that of a regional or state level, which in turn may be a micro-analysis unit in relation to planning at the national level.

However, some useful studies in the sphere of micro-analysis have been conducted at different research centers in the country. "Studies in the Economics of Farm Management" made under the auspices of the Directorate of Economics and Statistics, Government of India were sound attempts in this direction. But they were purely of inductive nature leading to descriptive and explanatory reports. It appears that a mass of data

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was gathered without giving proper attention to methodological procedures in research involving the development and testing of the hypotheses.

More appalling feature in our farm management studies is the neglect of the application of farm management research findings to the benefit of individual farmers whose economy was studied, analysed and interpreted. The farm management specialists should play the same effective role in carrying their research findings to the cultivators in organising and improving their farm business as is generally played by the agronomist, soil scientist, plant breeding specialist, veterinarian etc., through the agency of extension service.

In this context, the example of 'The Farm Bureau Farm Management Service' of the Department of Agricultural Economics, University of Illinois may serve as a guide to illustrate how the results of the research findings in farm management are applied to the improvement of the farm business of individual farmers.

Briefly speaking the Department of Agricultural Economics started this organisation as an humble beginning with a few farmers for extension service in farm management in 1924. The chief objectives of the service as listed by Mr. D. F. Wilken[3] are as follows :

I. As an extension programme

A. To enhance farm living by teaching farmers the principles of good farm management in all its phases. This is an excellent educational project for young adult farmers.

B. To provide the best kind of demonstration farms where the farm record verifies a job well done.

C. To provide organised groups of farmers for outlet of extension teaching activities at county level.

II. As a research programme

A. To provide annual standards of performance and financial results for

1. Size and type of farm classification
2. Various farm enterprises.

B. To provide budgeting standards

1. Financial cost and returns by farm enterprises, and input costs
2. Physical input-output standards.

C. To provide basic data to study trends in

1. Farm income and costs
2. Production, farm size, and physical quantities of inputs
3. Changes in organization and operation of systems of farming.

D. To provide basic data for supplementary research projects to be determined as need arises.

III As a service program for co-operating farmers

A. To enable each co-operator to know how profitable his farm is as compared with other similar farms.

B. To know how efficiently he operates each part of his business.

C. To learn of the practices followed by the most successful farmers.

D. To provide each co-operator the services of an experienced farm management specialist in planning the farm for profitable operation, conservation of the soil, and satisfactory family living.

The organisation of the service can be summarised as having nine local farm management associations and one unofficial state organisation known as "The Illinois Farm Bureau Farm Management Service", working in close

3 Wilken, D. F. "Brief Summary of The Farm Bureau Farm Management Service".

co-operation with the Department of Agricultural Economics. The records are maintained by the farmers themselves and the local fieldman, who is an agricultural graduate employed by the local association on the recommendation of the Department of Agricultural Economics, helps the farmers in the proper maintenance of farm records. The State Leader of Fieldmen supervises the work of the fieldmen.

The fieldman visits each farm 3 or 4 times a year. On an average one fieldman helps 175 to 200 farmers. At the end of the year, the record books are processed and analysed. Three kinds of reports are prepared for each farmer. The first report includes the analysis of the farm-business of the farmer as shown by his records. The second report, which is more detailed shows how his farm compares in various measures of farm successes and factors affecting the efficiency of the farm with the average performance of comparable farms classified according to size, type of farm and soil quality, in the area. The third one indicates the trends in the farm business of the farmer and the progress he has made over a period of several years.

The fieldman carries these reports and recommendations to the farmers and explains to him in a simple language the weak and strong points of his enterprise or enterprises and suggests necessary improvements in the farm business. The scheme is so successful that each farmer voluntarily contributes about $55 (about Rupees 265.00) each year to derive the benefit of the service.

In India and other underdeveloped countries, the necessity of such a type of farm management extension service with modification to suit the country's requirements is quite obvious for the reorganisation of farm business on sound economic footing and for orienting the outlook of the farmers towards planned production.

In the existing economy of the country coupled with mass illiteracy, the launching of such farm management extension services on a wider scale would involve technical and financial implications. However, as an experimental measure a beginning can be made in this direction in the development blocks through the utilisation of the services of the existing extension staff at the village and the block levels.

In the first instance five districts with two blocks in each, representing distinct agricultural areas may be selected in each state. In each block thus selected, ten farmers, one from each village level worker circle, may be chosen for study. Care should be taken to select only those farmers who are interested in the project and are enthusiastic to co-operate. A detailed set of records to be kept at the farmer's holding may be prepared by the State Agricultural Economist. It will not be very demanding on the time of the village level worker to help one farmer keep detailed record of his farm business. It is suggested that some allowance may be given to him as an incentive for this extra work. The agricultural extension officer (also known as assistant development officer (agriculture) in some states) can guide the village level workers to help the farmers in the proper maintenance of records. To acquaint the village level workers and agricultural extension officers with the techniques of record keeping, a short course can be organised in each block in which the State Agricultural Economist may impart training in the elementary principles of farm management and record keeping.

At the state level, a man qualified and experienced in farm management may

be appointed as Farm Management Extension Specialist, who would work under the guidance of the State Agricultural Economist. He would be in charge of the whole project and would co-ordinate and guide the work of the village level workers and agricultural extension officers. At the end of the year, the record books would be brought to the State Agricultural Economist's office for processing and interpretation. The village level workers would then explain to the farmers the weak and strong points of their farm business and guide them in improving their farm affairs.

Such a project would not only benefit the farmers in achieving economic goals and providing the State Agricultural Economist with detailed information of farm economy of different regions of the state, but will also impart practical training to the village level workers and the agricultural extension officers in clearly understanding the various farm problems in their economic perspective. The farm records would also serve as evidence of the profitability of various improved farm practices and would further the cause of agricultural extension work in the neighbouring villages.

Conclusions

1. The success of any agricultural programme largely depends upon how the scarce resources available with individual farm units are utilised to the best advantage. This will largely be governed by the plans developed at the micro or farm level which will critically be examined by the agricultural economists as a basis of national planning at macro-level.

2. Since farm management deals with micro-analysis at the farm level, the need for establishing a Farm Management Extension Service in India is keenly felt for the reorganisation of our farm business on sound lines.

In this connection it may be pointed out that the Farm Management Extension Service Organisations in the U.S.A. have rendered a very useful service in guiding the farmers to increased production with minimum possible expenditure. Such organisations can serve as a model in respect of their aims, objects and organisations to economically less developed countries like India. As such, the expenditure involved in the establishment of Farm Management Extension Organisations would be more than justified by their useful role in farm planning on economic basis.

3. It may be recognised that farm management extension can play the same effective role of demonstration in running the farms on business line as is played by field demonstration for popularising the use of improved seeds, fertilizers, implements or insecticides. Hence, the imperative necessity of establishing the farm management extension service and fusing it into the agricultural extension service of the country for accelerating the pace of progress under the Five Year Plans, cannot be over emphasised.

STORING AND PRESERVATION OF FOOD GRAINS

By: NAUTAMLAL C. TEJPAL

WE have safe deposit boxes and elaborate protective contrivances for storing gold and silver, the dormant capital which is useless. But we have no proper system of storing and preserving food grains, which are the life blood of the nation. So apart from the destruction of standing crops by birds, monkeys, and wild animals, the grain is destroyed by disease, pests and rats to the tune of more than 15% of the total production.

And when the Government makes a scheme to store and preserve the grains, it considers the expensive storage system of America which uses expensive disinfectant and preserving chemicals. But one will not consider or accept a plan which is cheap, foolproof and simple to execute in every village from the materials available locally.

Grain Storage

A round wall built of mud bricks with inner diameter of 5 feet and height of 10 feet from the ground level will be an ideal arrangement for storing grain. The foundation and plinth of stones, about 2 feet from the ground level should be built in a circle with say 5 feet diameter, and on it the circular wall of mud bricks should be built. The plinth should be filled with sand to the level of 1½ feet from the ground. By filling the sand in the base, rats cannot bore holes in the sand. Over the sand half or one foot of straw of the grain which is to be stored should be spread inside. The idea is that if the straw of wheat is used for preserving wheat, it will not allow any germs to germinate in the wheat. It is the best preservative against any kind of pest or insects. Paddy should be preserved in paddy straw and so on. Now above the level of the straw a hole of 3 or 4 inches diameter should be left in the mud wall, and plugged with a wooden peg, so that the stored grain can be taken out easily when required from this hole which is 2 feet high from the outside ground level. Then the grain is filled in this store and top of 1 foot is again spread with the straw. And the roof is made conical of mud and covered with straw to protect from rain. The outside wall is plastered with cow dung before every monsoon and the grain will keep for years without any loss.

This is very simple storing system for preserving grain, which I have seen in Egypt, widely in use. Even in time of the Pharoas and Tutakhamul such a storage system was used and after 5000 years, some wheat was found in its original state without any deterioration. Though its germinating power was lost after 5000 years of storage, otherwise the grain was whole and intact.

Most of us know that the ancient Egypt had mastered the art of preserving the dead bodies, and the mummies 5000 years old could be seen in the Cairo Museums. If they could preserve the dead bodies, they could also preserve grain for thousands of years.

Europe and America have taken so many good things from ancient India, China, Egypt and other old countries, and have elaborated and standardized the system and process of the ancient civilization and have put before the world discoveries of the present civilization. One would be astonished to know that even the idea of moving pictures, "Cinema", was taken from Ancient Egypt, and still any observer can see in the monuments near the Pyramids the sculpture, depicting the movement of each person, carved on the inner walls of these ancient monuments. So we need not be ashamed to ignore the modern American system, and adopt proved ancient system of food preservation.

FINANCE AND THE THIRD PLAN

Prof. S. V. RAMAYA

IN considering the financial aspect of the Third Plan, the size and the magnitude and the objectives and priorities laid are very relavant. From tentative proposals, it is suggested that the Plan would be of an order of Rs. 10,000 crores at the price level prevailing in 1952–53. The Plan may aim at 6 percent increase in the national income every year and an increase in the rate of investment from 11 percent to 14 or 15 percent of the National Income by the end of the Plan. It is quite possible that circumstances beyond our control may upset the calculations and therefore we must make allowances for those circumstances.

If we take the outlay at Rs. 10,000 crores then what we have to consider is the practicability of the Plan whatever may be its desirability. The reasons for envisaging a plan of such a magnitude are the griding poverty of the masses and the necessity to lay solid foundations for heavy industry to enable us to "take off" successively without much sacrifice in the future. That means the Third Plan aims at creating an economy which will be self-sustaining and self-accelerating. The Colombo conference remarks "The goal is to enable free nations of the area to achieve a momentum of economic progress which will make it possible for them to go forward in self reliant growth. In general the economies of the countries have been at subsistence level and only now are beginning to move ahead...... Immediate demands on their resources are growing and will expand further. All objectives however reasonable and important in themselves cannot be attained at once....Difficulties arise both because of the problem of keeping the rate of increase of gross national production greater than the rate of population growth and because the numbers in the age groups seeking employment are in many countries outstripping the increase in employment opportunities."

Foreign Exchange :—Let us first consider the foreign exchange resources required for the plan. Provisionally we may calculate them at about Rs. 3000 crores. We require foreign exchange reserves to fulfil our programmes of industrialisation and for knowing the "technical know how". Senator Kennedy of the U. S. A. opined that if foreign investment in India from all sources rose to 1000 million dollars a year then a growth of 25 to 30 percent increase in the National Income can be expected. Barbara Ward, former Foreign editor of the London Economist suggested that the Western powers should make an annual outlay of 5000 to 6000 dollars in long-term development loans to under-developed countries for the next few decades.

For India that would mean a general Western guarantee each year of between 1000 to 1500 million dollars in investment capital during the next five year plan. "This is not simply an Indian interest rather it is a challenge whether Western ideals and institutions can stand the test of world-wide application which confronts them to-day. If they can, the future lies with freedom". These views indicate an appreciation of the necessity of India's planning for democratic cause. Whether the foreign aid of such dimensions would be forthcoming depends upon not merely the interest which advanced contries exhibit in our Planning but their willingness to invest. Any under-developed

country would require in the initial stages huge imports but it lacks the wherewithal to pay back immediately. Consequently apart from Institutions like the World Bank and International Finance Corporation, the advanced countries owe a duty to give their helping hand.

Recently, the U. S. A. has introduced the condition that loans from its Development Loan Fund, have to be utilised only in the U. S. A. This would lay a greater strain on India's Balance of Payments position and on the cost-impact of the plan. Formerly a loan that was granted by U. S. A,, could be spent in any country and India was getting goods from the cheapest markets. Now the loan can be utilised only in the U. S. A., where the prices of goods are higher by 30 to 50 percent. This imposes a great strain on our internal price levels as the cost of the imports increases greatly. Unless the U. S. A. revises its loan policy it may not be possible to utilise the funds placed at our disposal.

Countries like Great Britain, West Germany and Japan who have attained high levels of economic growth can easily come to our help by granting accommodation direct in view of the new difficulties of the U. S. A. Development loans. The European Common Market programme is also imposing additional burdens on our balance of payments position by restricting our imports. We plead for a change in the policy of the European countries.

That the external content of the Third Plan requires vast amounts of foreign exchange is a pointer to us. We suggest invitation of foreign equity capital which will not entail regular servicing in the form of interest and loan payments. To a certain extent the strain on our balance of payments can be reduced by increased and proper phasing of our exports. Our exports are not increasing to the desired extent and the possibility of importing food from time to time are very uncomfortable propositions.

It is not our intention to suggest all the ways and means of raising resources for the Third Plan. We propose to deal with some aspects of the problem to enable us to have proper perspective in judging the feasibility of the plan.

The strain of repayment of loans will be less if the investments yield great output which depends again upon proper allocation and administration. Internally as well. efforts must be directed towards mobilisation.

Internal resources

That the yield from direct taxes must grow rapidly requires no emphasis. As incomes increase and as properties accumulate these must be mopped up by additional taxation. Suitable measures for checking evasion of taxation must be devised—as for instance Kaldor's proposal for a comprehensive Tax Return.

We suggest the following measures for increasing the resources :—

(1) Increase of Land Revenue
(2) Imposition of Salt Tax
(3) Imposition of betterment levies
(4) Scrapping of prohibition
(5) Ceiling on incomes—both urban and rural
(6) Compulsory insurance and provident Fund Schemes

Apart from these, the report of the Congress Sub-Committee has emphasized commodity taxation. "Taxation in a growing economy does not necessarily mean an absolute reduction in the standard of living. It only means a certain discipline in the matter of enjoying an increase in the standard of living. If the per capita income increases

by 3 or 4 percent per annum it should not be difficult to persuade people that in the immediate future, they should enjoy only 2 to 3 percent increase in their standard of living and save the rest of their income. Such saving may take the form of tax-payments or contributions to provident funds, saving schemes, purchase of Life Insurance or Government bonds etc.

Commodity taxation i. e. (especially excise duties) has been proposed for the following reasons. Firstly it is argued that as the plan generates incomes and as these flow into the hands of the masses their marginal propensity to consume may be checked by making them pay more for the commodities. Further it would yield large revenues to the coffers of the Government. In addition it may check the rise in prices which may occur due to deficit financing by mopping up the excess purchasing power. It may also restrict the consumption of essential goods.

Whether the results envisaged above would be realised may be a matter of conjecture. If essential commodities are taxed, there is every possibility of the price level rising, thereby creating a situation for increased demands for wages and salaries by industrial labour and Government employees. In view of the present continuous rise in the price level, the Planning Commission must pay greater attention to this aspect.

From both direct and indirect taxes we may expect a yield of Rs. 3500 crores.

The goal of economic policy is Democratic Socialism, hence the public sector will play a dominant role. Public corporations are no longer to be run on the principle of "no loss no profit". As the state has to play a major role in the developing economy, the expansion of public sector from its own sources is emphasized. It is estimated that publci enterprises may be made to yield Rs 800/- crores of profit depending on the policies. Prof. Galbraith has supported this view and suggested the setting up of a public sector Development Bank for financing public sector industries.

That public enterprises must be made to yield profit can be accepted provided they are run efficiently and economically. Prof. Galbraith rightly pointed out that the efficiency of a public sector undertaking must be measured broadly by the efficiency of its operation and by the ability to organise ample production and sell it at remunerative prices. How are we to judge whether the above criteria are applied in the running of public enterprises? There is always the danger that the public enterprises may cover up their inefficiency by charging abnormal prices and as they are in a monopolistic position, there is very little which we can do to better them. There are also the problems of managing these industries —the creation of a machinery whereby responsibility is devolved on some definite persons. All these require careful thinking and planning. That a public enterprise is making a profit, does not indicate a measure of its efficiency. The periodic increases in the railway fares and postal rates make us wonder when these public enterprises would be run most economically.

From loans and small savings we may expect about Rs. 1500/- crores provided we tap rural savings as well. Mobilising the resources in the rural sector may be easier provided schemes of development in the rural areas are taken up. From Provident Fund another Rs. 500/- crores may be tapped. From State trading Rs. 500/- crores may be expected.

Inspite of all the above liberal estimates a great gap remains in the

availability of resources. Perhaps a part of the gap may have to be covered up by resorting to deficit financing. Howmuch it would be, depends on the response of internal production of goods and commodities and the price-levels. If prices rise the amount would have to be drastically curtailed.

Perhaps inevitably some of the industries may have to be taken over by the Government for the interests of the National Economy e. g. Sugar and Textile Industries and their profits utilised for the economic development.

The mobilisation of resources is fraught with great difficulties. Planning necessarily involves sacrifices and sufferings in the initial stages and its success depends on the willingness of the people to work and undergo the needed austerities.

Success of the plan does not depend only on the availability of financial resources ; it depends equally on the discipline which people impose on themselves, the mobilisation of their efforts in the proper channels and the mettle which they exhibit in facing difficulties. We plead for a change in the attitudes of the people towards the new situations, and the message of the great Upanishads "Turn the search light inward" may embolden them to face New Challenges.

EVALUATION OF THE EFFECT OF LAND-REFORMS IN INDIA

By : J. N. SHARMA

THE question of land reforms is of considerable current interest. There is a heated controversy going on among politicians about the agrarian structure which will be beneficial to India in the existing circumstances. A study of the effects of land reforms already attempted should be of great use in this context. Firstly, it will give an idea of the feasibility of land reforms which may be attempted. Secondly, it will indicate the loopholes which need to be plugged and measures to be adopted for successful implementation of the land reforms legislation that may be enacted by the State.

Assessment of the effect of land reforms involves very detailed survey work, and it can be undertaken only after the legislation has had a sufficiently long period of operation. Besides, there are problems of 'isolation'. A given improvement in agricultural practices directly ascertained through field surveys or manifested by increase in agricultural productivity will be a joint product of a number of dynamic factors. The problem is how to isolate the effect of any single factor like land reforms from the total effect. The enquiries conducted in India with a view to ascertain the impact of land reforms have been mostly confined to the assessment of the working of the legislation rather than the impact of the land reforms carried out or supposed to have been carried out.

A considerable volume of valuable information on economic conditions in rural areas has become available, in recent years through the agricultural labour enquiry,

• The note has been prepared by the author in his individual capacity. It does not necessarily reflect the views of the Institute for Research in Economic and Social Growth, University of Delhi, where he is at present a Research Fellow.

the Rural Credit Survey, the reports of the Programme Evaluation Organisation, the studies carried out by the Agroeconomic Research Centres, the Farm Management Studies sponsored by the Directorate of Economics and Statistics and enquiries into some selected problems of development organised under the auspices of the Research Programmes Committee. Most of the information, however, relates to general aspects of social and economic change. No effort has been made to focus attention upon the basic problems of land reforms. It may be possible to retabulate the available information with a view to utilise it for the purpose of studying the impact of land reforms. But as it is, there are serious limitations on the use of the information for this purpose.

The Programme Evaluation Organisation have not been in a position to undertake any studies so far on the effects of land reforms legislation. Agro-economic Research Centres too have not conducted any specific investigation in this regard. As a part of the general study of the socio-economic change in rural areas opinion surveys were, however, conducted to elicit information on the impact of land reforms legislation in rural areas.

Research Programmes Committee of Planning Comission is the only agency which sponsored a few enquiries into the working of land reforms legislation. Reports relating to only four of the enquiries have so far been published. The findings of each one of these four reports will be summarised below.

Before we attempt to summarise the findings contained in the reports, it seems desirable that the scope of the evaluation be clarified.

The India-F. A. O. team was appointed in the beginning of 1957 to advise on the most appropriate methods of evaluating the effects of agrarian reforms. The team pointed out the need for making a distinction between the two stages of evaluation, viz.,

1. *Transitional evaluation* i. e. appraisal of the extent to which various land reform measures have been implemented and their immediate effects ; and

2. *Subsequent evaluation* i. e. appraisal of the more remote social and economic effects of the various land reform measures" where they have been implemented.

The enquiries sponsored by the Research Programmes Committee aim at the 'transitional evaluation'. What is attempted is almost exclusively an evaluation of the implementation of the law. It will, therefore, be a mistake to call this evaluation as an appraisal of the effects of the land reforms.

Of the four enquiries the results of which have been published, three related to the working of the Bombay Tenancy and Agricultural Lands Act, 1948 (as amended upto 1953). The important findings of each one of the three enquiries are stated below :—

1. Shri V. M. Dandekar-Maharashtra and Karnatak

The investigation was confined to sixteen districts, being broadly the Maharashtra and Karnatak districts of Bombay State. It covered a period of five years from 1948-49 to 1952-53. The Bombay Tenancy Act was enforced in December 1948. Thus when the enquiry was initiated towards the end of May, 1953, the Act had been in active operation for a period of more than four revenue years.

The investigation revealed "a general failure of the Act to promote its principal

objectives". The most important objectives of the Act were :—

1. Conferment of ownership on tenants,
2. Protection of tenants,
3. Regulation of rent, and
4. Regulation of transfer of lands.

The failure of the Act to achieve the first objective of promoting transfer of agricultural lands into the hands of tenants is indicated by the fact that, during the period of five years covered by the investigation, tenants acquired ownership of only 3.2 *percent* of the area cultivated by tenants at the time of enforcement of the Act.

The protection guaranteed to tenants by the Act was also not effective. Only 58.1 percent of the area cultivated by tenants in 1948-49, continued to be held by the same tenants in 1952-1953 ; 23.0 percent was resumed by the owners; 15.7 percent was held by different tenants; and 3.2 percent was owned by tenants. Thus in respect of 38.7 (23.0 + 15.7) percent of the tenant-cultivated area in 1948-49, the tenancy was terminated. Nearly 86 percent of the area in respect of which tenancy was terminated was accounted for by voluntary surrenders. The evasion of the law was thus mostly on account of the loop-hole that voluntary surrenders were not regulated.

As regards the regulation of rent, the Act provided that the rent payable by a tenant was not to exceed ¼th of the gross produce or its value in the case of irrigated land or 1/3rd for other lands. No specific provision was made regarding the cash rent. Of the total tenant-cultivated area 63.5 percent was share-rented and 36.5 percent was cash-rented. In the absence of any restriction on cash rent, it could be expected that there would be a shift from share to cash rent but no such shift took place. Except in case of districts of Thana and Kolaba, the levels of rent did not seem to have been affected by the Act. Details of the rent paid in respect of share-rented area were as follows :—

Share rent paid	Percentage of tenant-cultivated area
More than half	1.6
half	49.3
2/5th	4.5
1/3rd	7.8
¼th	0.1
1/6th	0.2
Total area share rented	63.5

The Act aimed at the regulation of transfers of land and conferred prior right on tenants in possession and cultivators of adjacent land to purchase the land if it was offered for sale by the owner. In actual fact, however, more than half of the area sold went to cultivators other than tenants in possession and neighbouring cultivators. The market in land remained unaffected in respect of volume of business as well as in respect of its character as a free market.

Apart from the immediate objectives stated above, the legislation also aimed at helping increase in production by providing incentive to cultivators to increase investment in agricultural improvements. The report revealed that although investment in agriculture increased considerably during the five-year period covered by the investigation, the increase could not be attributed to the Act. There was not any significant difference in the extent of increase in investment per acre which took place during the five-year period in respect of owner-cultivated lands, in improvements effected by owners on leased-out

lands, and in improvements effected by tenants in respect of leased-in lands.

2. Shri M. B. Desai—Gujerat (excluding Baroda district)

The enquiry was conducted during January–July, 1954. It covered 18 selected talukas of 9 districts of Gujerat.

The findings of the enquiry were similar to those of the enquiry relating to Maharashtra and Karnatak. Although there was, on the whole, clear trend towards increase in owner-cultivation and decline in tenant-cultivation during the period covered by the study, it did not indicate the extent of land transfers in favour of protected tenants. The transfer of lands was largely accounted for by resumption of land by owners for personal cultivation and 'voluntary surrenders'. The resumption of land for personal cultivation showed a marked decline after the 1952 Amendment Act came into force in January 1953.

The legislation was found to be ineffective in providing security of tenure. The legislation failed to check eviction of tenants, especially in North Gujerat. During 1951–54 as many as 27 percent of the protected tenants were evicted. One of the causes was, no doubt, nonpayment of rent but a fairly large proportion of evictions were likely to be illegal. 'Voluntary surrenders' on a large scale also point to the prevailing insecurity of tenure. Nearly 1½ lakh acres of land were reported to have been voluntarily surrendered in Gujerat upto June 1955. There is every reason to doubt the genuineness of these 'voluntary surrenders'.

The levels of rent over a period of time appeared to be going down and looked like settling down to levels permissible under the Act. But the process appeared to be slow and gradual. The maximum limits of rent payable under the Act (as it operated during the period covered by the enquiry) were 1/3 to 1/4 crop share. In actual fact, about 60 percent of the total area under crop-share carried rent exceeding 1/3rd of the crop. The area cultivated on a half crop-share basis amounted to nearly 59 percent.

As regards the effect of the legislation on productivity the report concluded that "tenants have not yet grown conscious of the need for improving productivity". Landless tenants felt difficulties in obtaining credit and they effected no significant improvement in equipment. The owner-cultivator, however could increase his borrowings, both short term, and long-term and improve his equipment to a significant extent. In respect of irrigation also, it was found that owned lands, in general, were favoured for investment in irrigation extension. Upto a limited extent to which leased lands were irrigated, it was found that the land lords' initiative and effort were not significant factors towards such improvements.

3. Shri V. Y. Kolhatkar and Shri S. B. Mahabal—Baroda District.

The enquiry was initiated in 1954 and was completed by about the middle of 1955. The findings of this enquiry were also more or less the same as those of the two enquiries discussed above. The findings may not, therefore, be stated in detail. The investigation led to the conclusion that "the Tenancy Legislation has not been able to achieve its major objectives .... the Act has been largely ineffective and landlords go on as merrily as ever."

As regards other economic effects of the legislation, it is pointed out that "In respect of the burden of debt and of the improvement of the land etc. our investigation shows that there has not been any significant change in the

position existing before the application of the Act. "

Thus the enquiries conducted into the working of the Bombay Tenancy Act, 1948 and its effects reveal that the Act was largely ineffective all over the State and that there was no clear evidence showing any correlation between the implementation of the Act and agricultural improvements.

4. Dr. A. M. Khusro—An Enquiry into the Economic and Social Effects of Jagirdari Abolition and Land Reforms in Hyderabad.

The enquiry was conducted during the period between July 1954 and November 1955. Initially the aim was to study the effects of Jagirdari abolition but later the scope was enlarged to cover other land reforms also introduced in 1950 in Jagirdari areas.

This study was much more ambitious than the three studies relating to the working of the Bombay Tenancy Act, 1948. It aimed at not merely the study of working of land reform legislation but also at the study of the social and economic effects of the land reform legislation. In view of the fact that "a significant degree of evasion" of the legislation was revealed by the enquiry, the value of a study into the social and economic effects of the legislation is, obviously, limited for the purpose of drawing any firm conclusions. Besides, there are difficult problems of 'isolation' in the context of a number of dynamic factors in operation since independence. Thus the results of the latter part of the enquiry, i. e. study of social and economic effects of legislation have to be interpreted with caution.

As regards the implementation of the legislation pertaining to land reforms the findings are, briefly, as follows :-

A significant degree of evasion was revealed. With respect to tenancy legislation, it was found, that out of the originally created 'protected' tenants as many as 22 percent were illegally thrown out and 17 percent were recorded to have 'voluntarily' surrendered. Thus protection given by law to tenants proved to be ineffective in respect of nearly 40 percent of the protected 'tenants'. So also the provisions regarding the ceiling on land were evaded by effecting transfers. Nearly 3½ percent of total ownership-holding was transferred on other names during the five-year period covered by the investigation. These transfers were bogus and did not result in any change in management or any redistribution of land.

It has already been pointed out that it is almost impossible to attribute a given change to individual circumstances. As such it is better to say that the following changes took place during the five-year period after the abolition of Jagirdari than to say that the abolition of Jagirdari or other land reforms had the following effects. The important changes which can possibly be attributed to land reforms are briefly stated below :

1. *Households and Population* :—Tendency towards migration of families from ex-jagir villages is clearly indicated by the fact that number of families declined by 8.6% during the five-year period after the abolition of Jagirdari. Despite this exodus from ex-jagir villages, population increased by 2½ % as a result of high birth rate.

2. *Pattern of land Holdings* :-Abolition of Jagirdari does not seem to have had any effect. The proportion of owner-cultivated land and lease-cultivated land to total cultivation holding remained constant at 83% and 17% respectively. The effect of tenancy legislation could only be seen from changes in the pattern

of land holdings in respect of 17% of the total cultivated land. Taking into account the 10% increase in the total cultivated area, it was observed that while owner-cultivated area went up by 14.14%, the tenant-cultivated acreage declined by 9.05%

3. *Income, Production and Productivity*:—At 1948-49 prices, agricultural incomes declined by 7.9%. Although productivity per acre declined by 5.3%, total production in the ex-jagir areas increased by 4.2% as a result of 10% increase in cultivated area.

4. *Monetisation*:-A clear trend towards monetisation was noticeable. The community as a whole received 48% of its incomes in cash as compared to 44% in the pre-abolition period.

5. *Land Revenue, Rents, Taxes and Other Dues*:-Land revenue rates per acre in ex-jagir areas were found to be lower by 9% in the post-abolition year as compared to those in 1948-49; rents per acre, on the other hand, increased by 19%; and property taxes also rose. Thus while the owner-cultivators and absentee landlords benefited from reduction in land revenue, tenant population suffered as a result of increase in rent. Feudal dues were found to be still prevalent though the amount paid was negligible. Even in 1948-49, feudal dues were not much in vogue.

(vi) *Investment*—Money investment for agricultural purposes increased by 64% and that for non-agricultural purposes by 144%. Even after allowing for higher prices, the level of investment appeared to have risen.

(vii) *Borrowing and Debt*—Total borrowing of ex-jagir families increased by 100% while borrowing for productive purposes increased by 86%. Total borrowing by cultivating community increased by 108% but that by non-cultivators declined by 41%. Village money-lender advanced 81% of total loans and weighted average of interest rate charged was 18%.

(viii) *Pure Effects of Jagir Abolition*—Jagir abolition appeared to have brought about improvements in village records, educational and medical facilities, the activities of the state Agricultural Department and administrative efficiency. Economic and social condition of Jagirdars worsened considerably.

(ix) *Pure Effects of Land Reforms*—Purpose of Land reforms in raising the standards of production and investment of the cultivating community in general and of the tenants in particular appeared to have been achieved to some extent. Investment among cultivators rose faster than among non-cultivators and agricultural investment among tenants increased at a higher rate than among owner cultivators.

A REGIONAL PLANNING FORUM CONFERENCE

By : MAHESH CHAND

WE have just returned from a regional University Planning Forum Conference where the Deputy Minister for Planning made an appeal to the cream of the academic world present to think vehemently and impress the Third Five Year Plan. Since the University Planning Forums are expected to undertake the activities to promote plan-consciousness among students and teachers in particular and among the villagers and the urban people in general, we presume we can openly mention and expose what happened there.

The Conference was a combined two-day endeavour of the Forums of Madhya Pradesh and Uttar Pradesh and one of the items on the Agenda was "The Approach to the Third Five Year Plan". The consideration of this subject was initiated by Dr. Harbanslal and prominent participants were teachers from Vikram University, Lucknow University, Saugor University, Agra University and Allahabad University.

Fundamental Questions

The speakers made out the following points. Democracy being given, they want immediate wise counsel to write out the macrostructure of the Third Five Year Plan. For this there is an urgent necessity to answer such questions as the following :—

1. What does the community want ?

2. What is the community willingly prepared or capable to pay for its wants ?

3. In view of the facts that we do not have clean slates to write out the TFYP and that there is need for an operational-plan, what are the total funds to be raised, what are the priorities for raising them and how is the effort to be allocated between the public and the private sectors ?

4. Whom to reach, how to reach, and to what extent ?

5. Would the politicians allow the inflicting of sacrifices on the agriculturists in order to secure investible surpluses ? The sacrifice may be through such instruments as low prices (or adverse terms of trade), state trading, compulsory fixed price purchases, or higher taxation via a steep raising of land revenue, or taxes on consumer items like kerosene oil, salt, cloth etc. ?

6. How far should the problems of unemployment and resources be resolved ? How far should the choice be between Steel and Food ?

7, Realising that in self-generating development external assistance should be depended upon to as small an extent as possible, what external assistance should be presumed for the Third Five Year Plan ?

8. How far should deficit financing be allowed and whether taxation can be depended upon to raise resources of the order of the four or five thousand crores of rupees ? In other words, can the Tax revenue of India (Centre & States) be doubled ?

9. Granting the importance of the influence of such forces as habits, attitudes, cultural endowments and socio-economic constellation and notwithstanding the Rostowian opinion that India and China have entered the stage of take-off, can the Third Five Year Plan enable us to take off ? What should be the shape of a policy of not-unbalanced growth and what should be our approach to resource mobilisation ?

It will be perceived that the questions are less concerned about organisational and administrative efficiencies. We learn in economics that factors of production are labour, capital, land, organisation and enterprise. Yet in the discussion that took place capital and land figured most, labour to an extent, and the other two the least.

Matching Projects and Loans

During the conference some political leaders drew the attention of the audience to the importance of combining a particular project, say Chambal project, with resource mobilisation from people in the area of the project (presuming the people prefer that project) and to the need for utilising every drop of man-power (Man-hour) which cannot be stored or stocked away for future use.

A prominent mention was that investible surpluses should be created in the sector with the lowest capital-output-ratio viz. agriculture and that progress in many countries shows that terms of trade do get adverse for agriculture.

Non-economic Motives

In our circumstances it would be appropriate to stress that solidarity and unity of country demands the earliest assurance of the supply of food and clothing to the people and renouncement of ways of living that have adverse demonstration effects. It is essential also to instil the craze to " work, earn and then consume " and the craze to work (even in unemployed).

For all this it is not necessary to be able to write down definite figures and to work out complex mathematical equations.

Besides ensuring food for those who are already producing and consuming food we have to mobilise food for :—

(a) those living in urban (or non-agricultural) areas, and

(b) those immigrated and newly employed in such areas where they would not get food supplies regularly from their rural family units.

The flow of food to the non-agricultural areas should be proportionate to the population there. So food must be mobilised. So far price mechanism has been more or less depended upon by us. This has led to unequal distributions and high prices. Hence food prices must be stabilised.

Lack of Examples

But there is also a case being made out that for certain food crops (including sugar-cane) the receipts do not compare with the costs and therefore there is a danger that the peasantry may not respond and produce more if the food prices are stabilised at the low levels. A member of the audience referred to the results of the study made by the Ministry of Agriculture about cultivation and economics in two West U. P. Districts. We feel that notwithstanding such studies the current market price of food-grains must be halved in order to create a better psychological set up among the masses. If this is expected to calculate an adverse effect on the agricultural producers (who are fortunately not yet organised) let their non-agricultural requirements—at least salt, cloth and kerosene oil—be supplied at half the previous prices. After making such price declarations wages in the textile industry can be cut by 50%.

A lot of mention was made outside the hall of discussion of the political danger to the Indian borders : it gave some of us an opportunity to emphasize a consideration of the point whether this is an opportune moment for better success if an appeal was made to our leaders and administrators to give up false means and false sense of pride and prejudice and to adopt simple honest

austere living to enthuse the masses to similar action. We still feel that whereas the planning authorities fret over monetary measures of the different aspects of the next plan they are ignoring the non-monetary essentials for economic development.

We have, in the past, made out a case for decentralised administration and planning in these columns and we must stress that we must also ensure that the police keeps down by force all those who may try to use the rod and their might to acquire power and status in the decentralised machinery.

Education And Teachers

Not a few of the participants emphasized among themselves the need for more and better education. One speaker seemed to condemn the teachers explicitly while another hit at the 'syllabus'. Only one emphasized the expansion of education at the primary level and an improvement of the emoluments and the status of teachers. Even today as one passes along the road from Bhopal northward, one comes across primary school classes where boys look on while the teacher brooses in the sun and repairs a cycle. Is such a teacher neglecting his duties or is he trying to implement the priorities of life! The condition of teaching at the primary stage demands immediate attention not only in regard to syllabus but also in regard to the emoluments, way of payment and status of teachers.

One of the teachers from Madhya Pradesh referred to the bad practice of showing a minimum percentage of success in the award lists by examiners at the Matric and higher stages. Said he, "What do you say of the direction that atleast so much percent of candidates must pass ? Surely you must also have experienced it". This showed that to that extent teachers who sit in the boards and academic councils are to be blamed and planning forums might be asked to give a thought how to correct such a state of affairs.

Small Savings

There was mention of (Compulsory !) savings drive by planning forums. Not a few had shown thousands of rupees worth of achievements. A little probing revealed that the provident fund amounts were transferred or large amounts were invested by the teachers—amounts which they would have invested even if there were no small savings drives. A savings campaign should mean transference of purchasing power from consumption to savings and not of invested savings from a private channel, say a bank, to a state channel (say, saving certificates). Voluntary small savings campaign should, we think, now give place to compulsory savings campaign.

National Saving Certificates or stamps may be sold compulsorily to people whenever and wherever they get a regular employment. Labourers and cultivators selling grains to employees getting salaries must all subscribe to such savings stamps and these resultant certificates should not be encashable but advances may be possible on the security of the certificates.

MARKETING OF AGRICULTURAL PRODUCE

By : HUKAM SINGH CHAHL

73% of our population is engaged in agriculture which shows that the mainstay of a vast majority of our people is agriculture.

It is estimated that ½ of the total national income is produced by the agriculturist but it is strange to note that our agriculturist is still half fed and half clad. The reason is that of backwardness of our agriculture and the defects in the marketing of agricultural produce. The marketing margins are too high and there is a big difference between the price paid by the ultimate consumer and the price received by the primary producer. The numerous intermediary agencies take away a big slice from the total price by dubious and other means. The cultivator is thus heavily handicapped in securing an adequate price for his produce.

The prosperity of the agriculturists and the success of any policy of general agricultural improvement depends to a very large degree on the facilities which the agricultural community has at its disposal for the marketing to the best advantage as much of its produce as is surplus to its own requirements. "Marketing is the crux of the whole food and agriculture problem" was aptly remarked by the United Nations Conference on Food and Agriculture.

While effecting reforms in marketing of agricultural produce all marketing aspects are to be developed and coordinated but among the various aspects which affect the producer directly, efficient regulation of markets and village sales needs greater attention. In the context of present economic and agricultural development of the country which aims at increasing the farmer's income, there is a paramount need for strong administration of markets where the producer converts his crops into cash. The policy of any improvement in agriculture without obtaining efficient marketing of agricultural produce, thereby securing to the farmer due returns of his produce, shall remain rediculous.

Our farmer is very backward and does not know the art of selling and is therefore deprived of his legitimate share of the actual price. The object of marketing legislation therefore is to secure to the farmer fair price through fair trading, fair weighment and independence from malpractices. We have failed to convince the farmers to sell their entire produce in a regulated market and have not succeeded to create confidence among them as a result of which 65% of the total marketable surplus is still being sold in the villages.

Defects and Suggestions for improvement.

(1) There remains a big gap between what has been achieved by marketing legislation and what it seeks to achieve. The gap is the sum total of shortcomings. The market functionaries who are accustomed to unrestricted freedom have not yet reconciled to the spirit of legislation and still hope to counteract its repercussions on the strength of their collective influence, power and resourses.

(2) *Village Sales* :—The village sales around a radius of 10 miles of every market should be brought under regulation. It is estimated that 65% of the total marketable surplus is sold in the villages and only 35% is brought to the market. The village purchaser purcha-

ses in the villages doing all sorts of malpractices. Village sales have been stopped in some states with the result that atleast one intermediary has been eliminated and the produce is brought to the market and sold under better conditions.

(3) *Marketing Co-operatives* :—The co-operative movement is weak in our country inspite of the fact that it celebrated its Golden Jubilee in 1954, especially no heed is being paid to marketing co-operatives. Marketing co-operatives should be encouraged which will go a long way to ensure better prices. Such societies can also give cheaper finance to the grower, can reduce marketing costs, can work on lesser commission and by standing in competition against private dealers shall render great advantage to the growers. While on tour I saw that at Surat 60% of the total produce is handled by the Marketing Co-operative Societies and only 40% is sold through traders as a result of which traders cannot dare play any mischief and rather they always try to give better service to the growers to attract them to their shops. In Punjab unless Marketing Co-operatives are developed, the grower of this important state won't be able to stand against the clever and well informed community of businessmen. Moreover the Marketing Co-operatives will teach the farmer business technique. I have seen great progress made through such Co-operatives at Surat, Kolhapur etc.

(4) *Administrative grip*:— The agriculturist shall be held to ransom unless the administrative grip is not tightened. The head of the establishment of a regulated market should be a Government servant vested with sufficient specified powers. Without this provision of the legislation, however strong it may be, it cannot be enforced successfully.

(5) *Co-ordination between community development programme and Agricultural Marketing* :—Marketing experts should be appointed in each development block who will teach to the growers the various aspects of marketing. At present a vast majority of growers do not still know about the marketing practices. The marketing experts in a C. D. Block shall disseminate marketing education to the growers.

(6) *Representation of growers on the Market Committee*:—In various states farmers' interest has been well represented by a majority of grower members but still the desired results have not been obtained as they are won over by the vested interests. Consequently the market committees have been found to be very weak and compromising with the trade.

(7) *Spirit of legislation* :— While enacting the legislation on marketing, State Governments hoped that the administration will refuse and suspend licences to the unfair traders but there is hardly any instance where the administration was able to do so.

(8) *Market news service* :—With a view to keeping the farmers fully and promptly informed about the trends and other changes in market conditions so that tbey may sell at right time and at right price, an efficient market news service should be maintained under every market committee compulsorily. Without great departure from the things as they stand now, the grower shall be held to ransom before the very eyes of administration.

To conclude I may add that since orderly marketing acts as an excellent incentive for increased agricultural production and its importance in a planned economy of a country needs no emphasis, we have to do something substantial in this field. The price support programme of the Government without obtaining fair trading in markets shall be incomplete. It has rightly been said that Marketing is the crux of the entire food and agriculture problem.

INDIA'S ECONOMY DURING KALIDAS'S TIME

By : Prof. JYOTI P. SAXENA

LIKE future, the age of Kalidas is uncertain. Traditionally, he was a 'jewel' in the court of Shakari Vikramaditya, who reigned over Malwa in the first century B. C. As against this, Dr. Hornly and Dr. Fergusson contend that he belonged to the sixth century A. D. Among those who maintain that he lived in the fifth century A. D., are such scholars and historians of repute as Dr. Smith, Macdonal, Keith, Bhandarkar and others. Anyway, the idea has come to stay that Kalidas was the contemporary of Chandragupta II, the Vikramaditya (375-413 A. D.) who triumphed over the Shakas and converted the Malav Samvat into his own Vikram Samvat.

Thus, the age of Kalidas connotes the golden age of India's history-the Gupta Period-which saw the revival of our ancient culture and glory. Further, foundations were laid of some of our noblest traditions in the various spheres of life. In a nutshell, Kalidas lived in an era which can be compared with the very best anywhere in the world—the Periclean, the Augustine, the Elizabethan and the like.

It is no gainsaying the fact that the importance of agriculture was always characteristic of India's national economy throughout the centuries upon centuries of her history. In the Vedic age, it was the 'highest and the noblest' occupation. In the period of the Epics, it remained the formidable 'source of pleasure and happiness'. In the Kautilya's 'Arthasastra', much attention was focussed on its all-out development. The Gupta Period gave further fillip to these glorious traditions of ancient India.

No wonder, India's economy during Kalidas's time depended to a large extent on this prime industry. Of course, the King then was known to be the lord of the earth, but the cultivation of land was not the function of the State. Naturally, land was given to the individuals and families and they owned it. According to 'Uttarayan Sutra' of the Jains, the zemindari system prevailed at that time. But even inspite of all this, the State was not indifferent to the development of agriculture. On the contrary, by constructing bunds, lakes and tanks it provided increasing irrigational facilities to the cultivators, which gave them initiative and fresh incentive to efforts. The result was that agriculture became a progressive and profitable industry, which, in turn, had its profound impact over other industries, trade and the ultimate prosperity of the nation.

According to the Industrial Commission, 'at a time when the West of Europe, the birth-place of modern industrial system, was inhabited by uncivilized tribes, India was famous for the wealth of her rulers and for the high artistic skill of her craftsmen.' The iron-pillar near Delhi constructed during the reign of Emperor Samudragupta bears full testimony to the above. Besides this, India's weaving industry was also at its peak during the time of Kalidas, and it was a source of earning for millions of countrymen. Other developed crafts during the time were ornament and ivory making. To add to this, all those industries which flourished during the reign of the Mauryas, made further expansion in this era and reaped rich harvest. In short, almost all the indigenous industries of the country got going swimmingly during the time, and we earned both money and fame through them.

Another characteristic feature of this age was the expansion of internal as well as external trade. The former was made possible by the inclusion of fertile areas like Malwa, Gujerat and Bengal in the empire, while the latter was facilitated by the capture of good harbours on the eastern and western coasts. Consequently, foodgrains, cloth, spices, salt, valuable stones etc. were transported from one corner of the empire to the other. The export to the foreign lands consisted of agricultural products, sandal goods, black pepper, toilets, nuts, pearls, and others for which we got cash besides horses, tin, silk cloth, camphor and the like. And this was partly due to the courage and action of the traders and partly due to the fact that the development of agriculture and the expansion of industries made trade inevitable. The immediate outcome of this was the meteoric growth of industrial centres like Ujjayini, Bharonch, Paithan, Vidisha, Prayag, Patiliputra, Varanasi, Vaishali, Tamralipti, Kaushambi, Mathura and others; the development of water-transport on the surface of Ganga, Brahmaputra, Narmada, Godawari, Krishna and Kaveri; the commercial integration of the different regions into one single whole; and, of course, the establishment of cultural and commercial relations with countries like Tibet, China, Iraq, Arabia and others. Consequently, the flow of wealth in the country increased immensely, which made life easier and happier.

So far as the medium of exchange is concerned, bigger transactions were made in gold mohurs and 'dinars', while 'kauris' were used in the smaller ones. The prevalence of barter, however, could not be ruled out. Most of the trade was carried on by individual traders and their 'shrenis' (guilds) which were duly recognized by the state.

According to Kautilya, 'from treasury comes the power of government'. As such, public finance always occupies the pride of place in the administration of a country. And Gupta period was no exception. Sources of revenue during the time of Kalidas were both rich and varied. It is told that no less than eighteen taxes were imposed in those days. 'Udrang', the land-tax, topped the list, and it came to one-sixth of the total produce. This was followed by 'Uparikar', which was paid by the public in kind. Another heavy source of income was the 'excise duties', which were levied on the goods produced within the frontiers of the empire. Others in the run were, taxes on metals and the 'police - sena - Kar'. Further, the State exchequer was enriched by fines, stamp duties, gifts and income from forests, pastures and mines. Traders and artisans paid 'fee' to the State. But in every case, the tax was light and people paid it without the least hesitation and inconvenience. Taxes on individuals were not imposed. In return for this, the State protected the life and property of the tax-payer and constructed roads, canals, bridges, tanks, buildings, rest-houses, temples, schools and vihars.

From times immemorial, the idea of decentralization of power has prevailed over the country life of India to a far greater extent than anywhere else in the world. During the time of Kalidas, village continued to be the smallest unit of administration. The key figure of the village was 'gramik' who looked after the security and peace of the village. In the performance of this task he was assisted by a 'sabha' which consisted of the elders of the village. Provision was also there for the appointment of sub-committees for managing the affairs of agriculture, irrigation, temples, gardens, etc. Expenditure incurred in this

connection was met through the imposition of taxes on the village weavers, goldsmiths and others.

Archaeological evidence in the forms of numerous inscriptions and works of art, music and literature confirm the belief that our standard of living during Kalidas's time was extraordinarily high. The portrayal of Ujjayini and Dashpur and their splendour in 'Meghdoot' and the 'Mandsaur Inscription' respectively; description of various types of food and drinks in 'Vikramovarshiya'; a reference of mirrors with golden frames and the use of syringes of gold during the vasantotsava in 'Raghuvansha', as well as documentation of rich and costly dresses and ornaments in almost all the classics of the day make it absolutely clear that life during those days was perfect and peaceful. No doubt, poverty was not unknown, but it is certain that even the have-nots were happy. Absence of any disturbance, of revolt, of personal animosities, and of thefts give currency to the above contention.

It becomes thus clear that seen from whatever angle, India's economy during Kalidas's time was both sound as well as progressive. Agriculture was fully developed. Industries had reached the peak of their glory. Trade and commerce stayed on the borderlands of extremity. Life in towns and villages was easy. In a nutshell, all that we crave and cry for to-day, was easily available then.

SUPERPHOSPHATE

The Master Key of Agricultural Industry

By: A. K. B. CAZI

FOR successful growth of plants and good harvest of crops, phosphorus is one of the three main nutrients that is required in larger quantities by the plants than can be made available to them by the natural process of disintegration and decomposition of soil particles. In fact, 80% of our Indian soils are deficient in phosphorus and respond well if phosphorus is supplied in the form of a fertiliser.

Phosphorus is found in every living cell and is essential to both plants and animals for their proper nutrition. If the supply is scanty, the rate of cell division is slowed down and the plant remains stunted and spindling. The highest concentration of phosphorus is found in the seed of plants and in the bony structure of animals. Half the amount of milk ash consists of phosphate of lime which ultimately comes from the soil through food and fodder. The capacity of plants to give better yield of seeds and the capacity of yielding better quantity of milk by milch animals is correlated with the phosphorus content of the soil, and in countries like U. K. where the pail under teats becomes brimful of milk, they have adopted a routine practice of applying phosphates of lime viz. 3 1/3 Cwt. of superphosphate per acre of grazing land per annum applied in two dressings in Spring and

Autumn. Phosphates are also part of certain amino acids that form the phosphate bearing proteins.

On regions where growing seasons are short, liberal supplies of phosphorus help crops to mature before they are injured or killed by frost. Low phosphorus content in the soil means delayed maturity and poor quality, and crops with a low phosphorus content. Animals feeding on such crops also grow poorly and develop diseases that can be cured only by supplying more phosphorus in their ration. The best external source of supplying phosphorus to crops in readily available form is Superphosphate.

What is Superphosphate?

Superphosphate is the name given to a mixture of calcium phosphate and calcium sulphate as turned out from a factory. It contains three important plant nutrients-Phosphoric Acid (P_2O_5 16-18%), Lime 20-21% and Sulphur 11-12%. It is a product of digestion of rock phosphate with sulphuric acid whereby the insoluble phosphate is rendered soluble and in which condition alone the plant takes up its phosphorus.

Role of Superphosphate as crop-fertilizer

Importance of Superphosphate as a crop fertilizer has been realised ever since the dawn of chemical analysis of plants and their products, as well as that of animals and their products. Liebig applied the knowledge of chemistry to soils and crops (1824). We know now that some 15 elements enter into combination to form a plant. Out of these, nitrogen, phosphorus, potash, lime and sulphur are important components of plants and animals alike, because these five materials taking part in the synthesis of plants are taken up in relatively larger quantities and consequently field soils become poorer in these after each crop. A growing plant takes up these ingredients from the soil. Animal body derives its requirements of these from the plant and its products. Superphosphate contains phosphorus, lime and sulphur and is therefore, a source of direct supply of three important components of plants.

Soon after its discovery as a fertiliser, use of superphosphate rapidly spread among the cultivators of advanced countries, and now it forms a routine agricultural practice. A new country of vergin land like America started using superphosphate since as long ago as 1847 but our cultivators until very recently depended on whatever farmyard manure was available as the only source of manuring the soils. This source of supply is too meagre now, since on an average only about 1/3 to 1/2 ton of farmyard manure is available for each cultivated acre. No wonder, when we compare the average yields of crops obtained in other countries, our yields are lowest. Even our neighbouring countries like China, surpass us, producing twice of our per acre yield. India's per acre yield of wheat is just 1/4th the yield of Holland and Denmark; of Paddy about 1/4th of Italy; of Cotton just 1/6th of Egypt and of sugarcane 1/3rd of Cuba, 1/4th of Jawa and 1/7th of Hawaii. In fact, our Indian soils have reached the maximum state of impoverishment. Our need of restoring to the land its fertility by manure, fertilizers and other devices is greatest, more so because our human population is multiplying fast. According to Dr. Huxley it will be double in 45 years hence. There is extremely meagre scope to bring additional land under cultivation. The only alternative left to us is to increase per acre yield if we are to march towards self-sufficiency.

Thanks to the sustained efforts of our Govt. to organize and pursue "Grow More Food" Campaign, the cultivators have begun now to realise that in order to obtain bumper yields of crops they have to include Superphosphate as a fertiliser in our routine agricultural practices. Earlier than adoption of application of Superphosphate, leading cultivators had started applying nitrogenous fertilisers which gave spectacular results in the first year but soon they realised that the soil-structure deteriorated as a sesult of continuous use of Nitrogenous fertilisers alone, and the higher yields which they had obtained during the first year were not sustained during the subsequent years in spite of regular application of nitrogenous fertilisers each year.

To save the cultivators from this unhappy situation the agricultural department of Bombay State had started preparing and distributing manure mixtures with subsidised rates in which Nitrogen was linked with phosphoric acid (P_2O_5) given in the form of Superphosphate in the ratio of 1:1. The ameliorative effect thus brought about by the inclusion of superphosphate was well appreciated. The intensive cultivation of sugarcane on growing scale, the intensive cultivation of paddy under Japanese method of paddy cultivation, intensive cultivation of other crops too and the generous dose of superphosphate given to their crops under crop-competitions by "Krishi Pandits" created favourable impression on the minds of the cultivators who observed that the large dose of superphosphate given in conjunction with nitrogenous fertilisers paid good dividends and the soil condition remained unimpaired even if there is continuous use of superphosphate year after year. So far as our agriculturist is concerned superphosphate is a recent-discovery of far-reaching importance.

What Superphosphate does as crop-fertiliser ?

Application of superphosphate as a fertiliser to a crop will show the following results :—

(1) It encourages root-development especially the lateral and fiberous rootlets. This means more rapid absorption of soil nutrients as well as better roothold.

(2) It increases the tillering capacity of cereals and grasses.

(3) It promotes better germination and imparts initial push to the growth of the young developing shoots. Physiologically, phosphorus is always associated with young rapidly multiplying cells of the plants.

(4) It facilitates intake of nitrogen and potash by the plant. Plants deficient in phosphorus cannot take in sufficient potash and as such cannot have sufficient strength in the straw. Thus its shortage would ultimately lead to lodging of the plant.

(5) It increases the yield of crops and at the same time increases its nutritional qualities as well as palatability.

(6) It has balancing influence on potassium and nitrogen and counterbalances the adverse effects of excess of nitrogen by diverting the nutrients towards flowering and formation of seeds and fruits, by improving the keeping qualities of the plant product and by improving the attractiveness of the plant products such as the colour of cane Gur, Chillies, Tomato etc.

By virtue of its property of diverting the nutrients towards flowering and seeding it tends to induce early maturity. Where plants are susceptible to certain pests and diseases in late seasons, this property of superphosphate is recommended to be taken advantage

of to ward off the incidence of such troubles. Example-incidence of rust-disease of wheat in certain parts. It also increases the resistance of some plants to disease due to normal cell development and vigorous metabolism.

(7) Superphosphate enables the plant in the manufacture of food components and enables the ears of grain to be well and more solidly packed with grains. The grains not only get heavier but the percentage of shrivelled or otherwise malformed grains is very much less as compared with grains the crop of which is not manured with superphosphate.

(8) Superphosphate possesses sustaining effect; not only is it available to the crop to which it is applied but the residual portion—remaining unutilised by the crop will be available for the succeeding crop. This is not the case with nitrogenous fertilisers, the excess of which tends to leach out.

(9) Superphosphate when applied to soil improves the structure of the latter without affecting its acidity or alkalinity in any way as has been observed by research workers at Rothamstead and elsewhere even though the same soil has been receiving superphosphate year after year.

Stimulation of the further research work on Superphosphate

In order to know more and more about Superphosphate especially its behaviour under different conditions of soil, its optimum requirements for different crops and the best mode of application, the experts of the department of Agriculture all over the country started paying now keener attention than ever before to the problems arising by the use of Superphosphate. The following line of experimentations were adopted—

Optimum dose and the most suitable combinations of fertilisers

According to Indo-American Programme, as many as 3354 trials were conducted all over India using Nitrogen and P_2O_5 at different levels, on wheat crop. 1775 trials dealt with irrigated wheat and 1579 on Kharif wheat. The object in view was to find out the best ratio and the optimum quantities of each of Nitrogen and P_2O_5, that would give the best results. In both the sets of experiments 40 Lbs N and 20 Lbs P_2O_5 gave the highest yields. Their highest combinations of N and P_2O_5 were

(a) 40 Lbs N and 20 Lbs P_2O_5.
(b) 20 Lbs N and 40 Lbs P_2O_5.

For Rabi Wheat, although the first combination gave the highest yield, the second combination which closely followed the first, proved the best from the point of view of profit obtained by the investment on fertilisers. Subsequently again as a result of 21 complex experiments on wheat it was found that 40 Lbs. of P_2O_5 with 40 Lbs N equivalent to 80 Lbs fertilisers gave almost twice the additional yield that was obtained with 20 Lbs of P_2O_5 and 40 Lbs of N, equivalent to 60 Lbs of Fertilisers. Thus the latter researches showed that for Rabi Wheat most appropriate or balanced ratio is 1:1, and the quantities of 40 Lbs. N and 40 Lbs P_2O_5 appear to be much better dose per acre than 20 Lbs. P_2O_5 and 40 Lbs. N. With this ratio and quantity of the two fertilisers used at the experimental farm at Junagadh (Rajkot Division) per acre yield was stepped up to 2912 Lbs of Wheat as against the highest average yield of 1608 lbs. as per trials of Indo-American Fertilisers Programme.

In the case of rice, we find very interesting results if we carefully analyse the data obtained by Indo-American Fertiliser Programme which is tabulated as follows :

Simple Fertiliser trial on Cultivators' Fields 1953-54 to 1955-56 on Rice for all India

Fertiliser Treatment lbs. per acre.	Yield per Acre Lbs.	Increase in yield per acre Lbs.	Profit on Fertilisers investment %.	No. of Experiments
Untreated plot	1782	—	—	2672
20 N	2072	360	194	1586
40 N	2240	528	117	780
20 P_2O_5	2000	288	374	860
20 N+20 P_2O_5	2240	528	188	1784
40 N+20 P_2O_5	2414	702	130	965
20 N+40 P_2O_5	2406	694	185	674

From the above table we can observe that 40 N only gave additional yield of 528 Lbs. and 20 N+20 P_2O_5 gave additional yield of 528 Lbs., showing that 20 Lbs. P_2O_5 has replaced 20 Lbs. N. without affecting the increase in yield.

Again

40 N+20 P_2O_5 gave additional yield of 702 Lbs. and 20 N + 40 P_2O_5 gave additional yield of 694 Lbs. i. e. approximately equal.

Here again 20 Lbs P_2O_5 has replaced 20 Lbs. N without affecting the yield.

Thus in the above combination 1 lb. of P_2O_5 gave as good results as 1 lb. of N. As P_2O_5 is much cheaper than N per unit, the above results are really more in favour of P_2O_5 than N, and appealing on economic grounds as could be seen under column No. 4 in the above table. In short, the efficient production of many crops is dependent on the use of phosphatic fertilisers.

The best way to apply superphosphate is via compost pit. When compost is fermented with superphosphate, not only is it rendered into the best assimilative form for plant use, but the readily oxidisable Nitrogen such as that found in urine is at the same time prevented from being lost by volatilization. Losses of N & K by way of leakage are also prevented. The quantity of superphosphate to be added to a standard sized compost pit (10 ft. × 6 ft. × 3 ft.) should be about 112 lbs. This quantity will be sufficient to preserve the Nitrogen. But any amount above this quantity may be added upto the fullest dose of superphosphate required to be applied per acre of the particular crop. In case the organic matter consists of hard, resistant type of fibrous material such as sugarcane trash, paddy husks etc. and if sufficient quantity of cattle-urine is not available to soak such material, it may be desirable to add some readily available Nitrogenous material as a starter for Micro-biological activities along with superphosphate.

The compost which contains added superphosphate, intimately linked with organic matter, is termed "Super Digested Compost" as it becomes really *superb* and in this condition, imparts greater impetus to crop growth and gives higher yields.

Cultivators who purchase town compost from nearby Depots will do well if they improve the fertilising value of this compost by mixing thoroughly superphosphate at the rate of 56 Lbs. or more per ton and keep it piled up for 20 days in shade before it is applied to the crop, care being taken that the heap remains moist all the while.

INPUT OUTPUT RELATIONSHIP IN AGRICULTURE IN N. E. S. BLOCK, KALYANPUR (KANPUR)

By: Dr. J. S. GARG & S. C. BIRLA

A scientific study of input output relationship in agriculture provides a sound basis for developing the economic aspect of agricultural production on a pattern that would guide farmer to operate at the minimum cost and maximum profit combinations. The success of the farm will depend not only on the efficiency of the individual enterprises but on the scale with which they are combined so as to make effective use of all the available resourses.

The inputs include all those items on which cash and kind expenditure have been incurred and also items such as family labour, farm produced manure, etc. Similarly the gross income represents the value of total produce and includes the imputed value of by-products, e. g. bhusa.

A study was conducted in two villages, under the N. E. S. Block, Kalyanpur (Kanpur), namely Binayakpur and Beri Akbarpur situated at 5 and 7 miles respectively from Kanpur city on the Grand Trunk Road. Generally, the cultivators of these villages are vegetables-cum-grain growers. The important crops grown in locality are wheat, gram, barley, gram and barley mixed, Paddy, Juar and Arhar, Chari, Potato, Tomato, Bhindi, Torai, Khira and Sugarcane. The data on nine cultivators' holdings in these villages shows the following ratio of output to input. The cultivators were selected purposely who were willing to provide the required information. The study was conducted by the cost accounting method, in the year 1958–59.

Table 1.

S. N.	size of holding	Input output ratio
1.	5.76	1.8
2.	5.89	1.8
3.	6.66	1.5
4.	8.03	2.0
5.	8.56	1.2
6.	9.22	1.6
7.	12.65	2.0
8.	15.07	2.0
9.	21.36	1.6
Average	10.35	1.7

The main conclusion that emerges from the above table is the low ratio of output to input which is only about 1.7 for all farms even in a locality near to the city. Secondly there is no correlation between the input output ratio and the size of holding, which has necessitated a deep insight into the intensity of cropping, value of input, output and Net Profit, which are given below.

Table 2.

S.N.	Size of holding	Intensity of cropping	Value of Input	Value of Output	N. Profit (In Rupees per acre)
1.	5.76	141	260	467	207
2.	5.89	202	710	1287	577
3.	6.66	219	699	1065	366
4.	8.03	243	558	1120	562
5.	8.56	125	272	333	61
6.	9.22	137	157	245	88
7.	12.65	102	143	281	138
8.	15.07	167	172	350	178
9.	21.36	112	157	243	86
Average	10.35	140	283	489	206

From the above two tables it is obvious that there is a direct correlation between the Intensity of cropping and the Input Output Ratio. In general, the ratio increases with an increase in Intensity and vice versa. Another feature of the above table is that with an increase in the size of farm the value of output as well as that of Input per acre decreases, so is the net profit.

It is concluded that Input Output Ratio even in a locality very near to a big town is not as high as it is generally considered at the prevailing prices of Agricultural commodities. The Ratio becomes still more unfavourable in agriculturally bad years or during the period of low agricultural prices. The problem becomes all the more serious when the low ratio is judged against the background of low size of farms and low absolute values of Input and Output. The vicious cycle of low output, inefficient utilisation of land, labour and capital and low Input can be tackled only when the factors responsible for the low output as well as low input output ratio receive due attention in formulating the agricultural plans for improvement.

SUGARCANE RESEARCH IN MADHYA PRADESH

By: D. S. UMAT

I–Field selection

IN our State, practically no selection of fields appears to be done by the cultivator for this important cash crop. He seems to be reluctant of putting in any or as many fields as he likes under this crop. It is thus not an uncommon sight to find miserable-looking, partially or wholly diseased crops in low-lying and water-logged situations.

The cultivator should as a matter of fact reserve his best, well drained fields, for this important crop and put in only as much acreage as he can conveniently and efficiently handle. He needs to be convinced that with concentrated efforts he can get as much yield from smaller areas as he may be getting now from his diverted efforts on larger areas. However, our efforts should be intensive, which will ultimately result in releasing more land for other food crops also.

II–Varietal

The improved and tested varieties, particularly the medium ones in view of their better yields as compared to the early ones have been taken up in cultivation by the vast majority. There does not seem any possibility of increasing acreage under early varieties in the absence of any premium in favour of the comparatively low-yielding early canes. The Research-Section has now released better yielding early canes and it is hoped that if the areas under these varieties are increased and the supplies to the factories are properly organized, both the factories and the growers would be benefited to a great extent.

What remains to be done in the present circumstances is an adjustment of the acreage under the early and medium canes in any area, so that the medium and late varieties do not predominate as is the case now.

III—Cultural

1. **Seed Selection**–In spite of its great importance in relation to disease and pests, seed selection as a practice seems to have been adopted by only a few cane growers. As such propaganda in this direction should be specially intensified.

2. Cane planted at the proper time under favourable moisture conditions germinates best. In late planting, germination suffers with delay in planting and under such conditions, seed cane soaked in water or in lime-wash gives better germination than unsoaked seed-cane.

Lime-wash can be prepared by dissolving one pound of bazar lime in 500 pounds of water. This seed-cane should be soaked for about 30 hours before it is planted. However, late planting should immediately be followed by watering to secure good germination. In late plantings, seed rate may be given 1½ times the normal seed-rate to get a good stand. Similarly the use of top-portions of cane for seed purpose although decidedly of advantage particularly in late-planting, does not appear to have been taken up as a general practice by the cultivators who are compelled to plant their cane in the late season.

3. *Seed-rate*—Use of three-budded setts planted end to end or slightly overlapping gives the best results under our conditions. This is practiced widely but should be introduced wherever necessary. About 12,000 setts are required per acre. In the case of varieties with poor germination, a higher seed rate about 1¼ times of the normal one should be used. In late plantings also, it is advantageous to plant additional setts to ensure a moderate stand of cane.

4. *Field preparation*—Fields reserved for sugarcane should be green manured and after that cultivated occasionally to keep the weeds down. Generally 8 or 10 ploughings are to be given during the preparation period. The field should be irrigated a few days before planting cane and given 3 or 4 ploughings with the desi plough to reduce the soil to a fine tilth. Where trench planting is desired the trenches must be prepared in October for winter-planting (Oct.-Nov.) and in December for spring planting (Feb.). They should then be manured, irrigated and hoed up frequently till the planting time. Whether in trenches or on flat, cane should be planted with sufficient moisture in the soil.

5. *Method of Planting* :-The ordinary planting on flat is most economic under our conditions and standard of cane-cropping. Trench planting should only be resorted to when very heavy yields are desired under intensive method of cultivation. Trenches ensure a good support to a heavy crop of cane and prevent it from lodging. In dry and hot areas, where the soil is light and economy in irrigation water is desired, trench planting is advantageous.

6. *Spacing Between Rows* :—Line planting on flat or in trenches is more or less a general practice now but propaganda is needed wherever cultivators still adhere to the practice of planting their cane irregularly behind the plough.

Spacing between rows is dependent on the fertility of the field. Higher fertility needs wider spacings and lower fertility closer spacings. The following table will give an idea of the spacings to be adopted for any level of fertility.

Level of Fertility	Expected Yield Per Acre	Spacing to Be Given
(a) High	About 1000 mds.	3½ ft.
(b) Medium	About 700 mds.	2½ ft.
(c) Low	About 400 mds.	1½ ft.

7. *Time of Plantings* :—This is the most important factor telling upon the yield of cane under our conditions. Although it varies with a locality, yet attempts should be made to complete the planting within, the below mentioned period.

For Winter Planting—From Mid Oct. to Mid Nov.

For Spring Planting—From Mid Jan. to the end of Feb.

Late plantings have been found to give low yields of cane and no amount of manuring or irrigation can make up for this loss. The importance of timely planting is often under-estimated and should be emphasised by the propaganda staff. However, winter planting should be adopted by the resourceful cultivators for the present to escape the menace of borers in the months of Apr. & May. For this the cultivator will have to be convinced that the net profit from the winter planted cane is more than that of his late planted cane of April plus the wheat crop that be harvests before it. Late March and April plantings should be discouraged at any cost in order to reduce the havocs caused by severe attack of borers in these months.

8. *Hoeings* :—The importance of intercultural operations is again very great. One hoeings about 4″ depth after each irrigation appears to be an ideal practice. Weeds are very harmful to the sugarcane crop and should be eradicated at the time of each hoeing. The value of interculture is again generally under-estimated and it is necessary that propaganda and demonstration is intensified.

9. *Earthing-up* :—All well grown cane crops expected to yield 500 mds. per acre or more should be earthed-up. This operation should be carried out after first heavy showers in the month of June. The earth should be piled up on either side of cane rows to a height of 6″–8″. When the crop is small, earthing does not appear to be essential and can be dispensed with.

IV Manurial

1. Soil Nutrients :—

Of the main nutrient factors, Nitrogen and Phosphates have been found to be not only the most important but also lacking in our soils. Potash appears to be sufficient in most of our soils.

2. Dose of Nitrogen & P 205—

It has been found that increasing doses of nitrogen give correspondingly increased economic yields up to a certain limit. This limit is reached under our conditions at about 180 lbs. nitrogen per acre. At this level yield of about 800-900 mds. per acre can safely be expected provided other recommendations regarding variety of cane irrigation and interculture, time of planting etc. are followed. This can very well be adopted by resourceful cultivators for pleasant cultivations.

Inadequate manuring (some where only about 20-25 lbs. nitrogen per acre) still remains more or less a chronic picture. Where irrigation facilities are adequate the optimum dose of 180 lbs. nitrogen per acre along with 60 lbs. P 205 is the best for those who can afford to do it. However, propaganda should be directed towards raising the present low manurial level to atleast about 60 lbs. nitrogen plus 60 lbs. P 205 or so per acre.

3. Form of nitrogen—

The best results have been found by a suitable mixture of organic and Inorganic manures in the ratio of 2 : 1 respectively. The use of inorganic fertilizers like Sulphate of Ammonia which seems to be finding favour in some areas should be definitely discouraged. Our soils are poor in organic matter and the exclusive use of inorganic fertilizers not only depletes the humus reserves but also has a slow but sure cumulative deleterious effect on the soil composition and its productive capacity.

The use of cowdung for fuel purposes depletes a very useful stock of an organic manure which is readily available to the cultivators, but in the absence of any

alternative fuel there seems to be no way out. The cultivator therefore, should be encouraged to adopt other suitable organic and bulky manures such as green manuring, compost from village refuse, farm trash and other vegetable refuse, earth soaked with cattle urine from cattle sheds, town compost from night soil and press-mud. These should be supplemented with nitrogenous concentrated fertilizers such as Sulphate of Ammonia or oil-cakes etc. according to requirements.

The following are some of the more importants forms of manuring suitable for cane crop.

(a) **Green-Manurings**

Sanai (Crotalaria juncea) ploughed in supplies about 60 lbs. nitrogen per acre. The proper time of ploughing in depends on climatic conditions being favourable or otherwise for the growth of sanai. If these conditions are favourable, sanai about two months old is fit for plouhing-in. In unfavourable weather when sanai growth is slow, it would be fit for ploughing-in after about 2 to 2½ months growth. In suitable combination with other manures it gives as good results as any other manure. In combination with compost or F. Y. M. it ensures a cheap supply of manure to the cultivator. It is a profitable proposition to utilize the stems for fibre and plough-in the top portion and the roots.

(b) **Molasses**

Molasses which is readily available has a high manurial value. It should be applied about three months before planting time preferably before monsoons or otherwise should be followed by irrigation and repeated ploughings. It is a good manure for those fields which are situated near a sugar factory provided :—

(i) it is made available ex-factory at a cost of about one anna per maund and

can easily be decomposed.

(a) **Press-mud**

It is also available near sugar factories. Press-mud from sulphitation plants only should be used. It should be applied more or less in the same way as F. Y. M. and when properly used, it is as good or even better in manurial value.

(d) **Other Bulky Organics**

Manures like F. Y. M. farm or municipal compost etc. give better results when these are applied in combination with quick-acting manures, such as Sulphate of Ammonia or oil-cakes. In the long run bulky manures help in maintainings the good texture of the soil and its moisture retaining capacity.

(e) **Oil-Cakes**

Among quick-acting organic manures are neem, ground nut and castor cake. Mahua-cake is comparatively slow in action. These are indisputably among the best manures for sugarcane, not only due to the easy availability of their nitrogen but also due to their additional substantial contribution of phosphates, potash and organic matter to the soil.

(f) **Inorganic Fertilizers**

Among a number of quick-acting inorganic manures so far tried, Sulphate of Ammonia and Ammonium Sulphate-nitrate are the best ones. Urea occupies the third place. However, it has not been found as effective as Ammonium-sulphate or Amm. Sulp. nitrate during the germination phase of the cane crop. It should not be applied direct but always mixed with the earth.

The continued use and entire dependence on these inorganics is not desirable in view of the cumulative harmful

affects it has on soil-texture P. H. etc. These can best be used as a supplement to some bulky organic manure.

(g) Organic and Inorganic Mixture

Best results are obtained when organic and Inorganic manure is mixed in 2:1 proportion respectively.

4. Time of Application

Generally speaking, bulky organic manure should be applied well in advance i.e. about 1½ to 2 months before the time of planting. Quick-acting organic manures can be applied a little in advance i e. about 1 to 2 weeks ahead while very quick-acting inorganics can be applied after germination. For P205, the whole of super phosphate should be applied befor planting. Inorganics alone are best applied in three doses i. e. ⅓rd at planting ⅓rd at tillering and the remaining ⅓rd at the time of final earthing. With the break of monsoon the crop grows rapidly and correspondingly the demands for nutrients increases. It is therefore, essential that all manuring should finish before the start of Grand-Period of Growth of Sugarcane crop.

5. Irrigational

Irrigation is a very necessary and important factor in cane crop production. Within certain limits, a large number of irrigations with smaller quantity of water per irrigation prove more efficient than a smaller number of irrigations with a larger quantity of water. The actual number of irrigations required for the sugarcane crop during the season not only varies from tract to tract but also varies from season to season even in the same tract depending upon the intensity and distribution of the monsoon. However, 8 to 10 irrigations for spring planting would suffice the requirement of the Sugarcane crop. Fortnightly watering during the months of Apr. & May reduces the borer attack to a considerable extent, while one or two winter waterings help appreciably in keeping down the fibre percentage of cane at a low figure. Where frost is likely to occur during December or January, extra irrigation would be found to be the best means of protecting the crop against damage.

6. Rotational

Sugarcane being a heavy and exhaustive crop, leads to a gradual deterioration of the soil if it is raised in the same field more frequently than once in three years. Three to four year rotations are the best for raising good sugarcane crops. Where a ratoon crop is taken, the field should not be planted to cane during at least the two years following the harvest of the ratoon crop. Sugarcane should preferably be preceded by sanai used for green manure and it is always wise to include one or two leguminous crops in the rotation where green manuring is not done. A well-known rotation in many paddy growing areas is chari-gram -paddy-pea-sugarcane, where leguminous crops alternate with non-leguminous crops.

A rotation which is likely to prove lucrative is Arhar cum groundnut alternated with trench-planted cane. Arhar is sown in lines 9 feet apart and groundnut in the interspaces. After the groundnut is harvested 3 trenches, 3 feet apart are dug in each interspace between the lines of arhar and cane is planted in February. In March when the cane has germinated, the arhar is harvested and the cane allowed to grow. This, however, is a two year rotation, and care must therefore be taken to manure and cultivate the cane well. In every locality a fairly wide choice of crops and therefore of rotations is available. The choice of a rotation is largely dependent on the crops grown locally and on the immediate

needs of and facilities available to the cultivator. Apart from the precautions recommended above therefore, it is difficult to lay down any rotation as being better than any other for a given locality save through local experience.

7. Ratooning

Long, indiscriminate, unmanured and uncared ratoons serve as excellent breeding centres for insect pests. It is thus essential that all ratoons beyond the first should be vigorously discouraged, unless they are nurtured in the same way as plant-cane then and then alone ratooning can be a justified practice.

In Harsi area alone the ratio of ratoon to plant cane is more than 2:1, which is not very encouraging and necessitate ban on ratooning of sugarcane in the disease-affected fields.

The best period for harvesting plant cane for keeping ratoons appears to be the first fortnight of March. As soon as cane is harvested, the fields should be irrigated and when dry enough, it should be deeply hoed up by a cultivator. If the plant cane had been earthed-up, then the hoeing should be preceded by breaking down of the earthed-up ridges. Thereafter the ratoon crop should be treated in the same way as plant-cane. It should be manured like plant cane and irrigated and intercultured with as much care and frequency as is done for plant-cane.

8. Harvesting

In order to ensure the best returns both from the grower's and miller's point of view, it is essential to ensure proper timely harvests for the different cane varieties. It is desirable that only early ripeners and ratooons should be harvested first to start with. Medium varieties should be harvested from January onwards. Digging out of cane along with the lowest cane nodes increases both the yield of cane and sugar and brings about considerable reduction in the borer population. Borers generally take shelter in the lowest underground nodes of cane. This is very desirable practice and certainly not uneconomic.

Reduction of the time between harvest of cane and its milling to a minimum is very beneficial from the point of view of sugar recovery in the mill, particularly towards the end of the crushing season when the season is warming up.

9. Insect Pests and Diseases

The major insect pests of sugarcane occurring in our State are (i) Borers (ii) Pyrilla (iii) Termite (iv) Whitefly (v) Lygaeid bug (vi) Mealy bugs. The borers, termites, and bugs have been found to cause maximum damage during summer while pyrilla and whitefly during rainy season and onwards. Under Dabra conditions, Early Shoot borer is the first one to attack the sugarcane crop in the month of March when the maximum temperature is 100′ F with about 65% relative humidity. In the month of April, the attack becomes most severe as Stem borer also appears in the picture. It has been found to thrive best at high temperatures and low humidity. Its population decreases considerably with the progress of monsoon and by this time the top-borer comes in the picture. Root borer is observed after the maximum temperature limit is passed in May. It thrives best during the rainy season when the avarage maximum temperature is 95° F with 85% relative humidity. However, maxium activity of pyrilla starts from the beginning of October to the end of November when the average maximum temperature is about 80°F with about 80% relative humidity Lygaeid bug and whitefly are mostly ratoon-pests.

Similarly, there are a number of diseases of sugarcane, of which red rot, wilt, smut, stinkingrot. top rot and red stripe are more common. Red rot is most detrimental to the cane crop and then comes smut.

The rest are not important ones. These diseases are marked by periodicity. Red-rot appears in the last week of July and continues till harvest; Wilt from October to harvest, smut during hot months but remains dormant during monsoons and periods of severe cold.

Preventions and control measures

The important measures for controlling sugarcane diseases consists of

(i) Varietal selection releasing only resistant varieties for areas where red rot frequently occurs; to achieve this object growing of Co. 312 should be discouraged in the areas where red-rot occurs more frequently.

(ii) Seed-selection

The results of using apparently healthy seed crop from diseased clumps, yellowing affected crop etc. shows clearly how constant neglect can lead to deterioration of useful varieties. Co. 312 had already been succumbed to red-rot. Co. 453 & Cos. 245 & 321 have also been reported to succumb to smut. The failure to adopt suitable rotations and abuse of the practice of ratooning have contributed to the perpetuation and spread of these diseases. Thus in the affected localities care should be taken to avoid ratoons becoming the focil of infection. In case of smut, ratooning of affected fields has shown marked increase in disease incidence, hence ratoons should be maintained only in fields free from diseases.

Treatment of the red-rot affected setts with hot water at about 52°C for 20 or 25 minutes prior to planting has been claimed to result in better germination and yields. Similarly from smut affected canes for 25 minutes at 52°C prior to planting considerably reduces the incidence of this disease.

Similarly there are various ways like spiking method, spraying with B. H. C., D. D. T., Chloradane, toxaphene, aldrin, dieldrin, endrin etc. but the easiest one appears to be irrigating the fields fortnightly after light earthing and manuring during the months of April and May for early shoot and stem Borers, when the plant is passing through its tillering phase. On the whole clean cultivation appears to be the only tool with us to combat with this pests manace. Right from the very beginning every agricultural operation efficiently carried out acts in itself as a simple and practical preventive measure against pests and diseases, proper and timely operations not only improve field hygiene and thus prevent the field or crop from becoming a breeding ground for diseases but these also help directly by improving and maintaining the vigour of the crop and increasing its resistance to pests and diseases. Operations such as rigorous selection of healthy setts at planting time, proper and timely irrigations and intercultural operations, effective manuring and drainage, growing of only promising varieties like Co. 419, Co. 421 Co. 453, Co, 617, Co. 954 and Cos. 245 would ensure all that is practicable as preventive measures against pests and diseases.

LEVEL OF AGRICULTURAL PRODUCTION IN OLD CHINA

By: Dr. P. C. BANSIL

(Continued of the last issue)

Double Cropping

7.1 Multiple crop index in China is high. Wilcox[14]. refers to as many as four rice crops being grown from the same field in China, although the crop does not take less that 115 days in all. This is done by sprouting the seed away from the field and thus saving 25 days for each crop.

7.2 All this is possible because of specific climatic conditions and an efficient irrigation system as already discussed. Besides this, cultivation techniques in China are complicated and there is a fine tradition of intensive cultivation.

7.3 China is located in the North temperature Zone with mild climate. Since the country lies within smaller degrees of latitudes, (53 and 18 degrees North large part of the year is suitable for the growth of plants. Winter temperature is quite different between the northern and southern parts of China but summer temperature is more or less uniform. The frost-free period lasts for 125 days in the northern-most part and over 350 days in the Southern most part. Precipitation is ample but rainfall is scarce in the North West Region and frequent in the Southeast region. In the central and southern parts, it is, therefore, possible to grow two or three crops a year.

7.4 In recent years, the cultivation of double rice crop has spread not only to the Yangtze but also to the Huai River. This practice has now been popularised in the Tai Lake, Chav Lake, and Chengtu plains and the yeild is higher than single cropping. It has also been proved by the Tientain Agriculture, Forestry and Water Conservancy Experimental Station that if cultivation technique is improved, transplanting of seedlings can take place 20 to 30 days ahead of the usual time in the North.[15]. This would help extending double cropping of rice even to the North.

7.5 The physical ability of China to have multiple crops has placed the country in a very favourable condition which other countries in the world cannot enjoy.

7.6 It has not been possible to collect data on double cropping for the pre-war period. The table below, however, shows net and gross sown area during the years 1952 to 1955, in China as well as India.

14. Acres and People p. 207.

Table 5. Comparison of net sown areas, and total sown area in China and India 1952 to 1955

(in thousand acres)

S. No.	Year	China 1 Net-sown	China 1 Gross-sown area	India 2 Net-sown	India 2 Gross-sown area
1.	1952	266612.9	348972.4	304900	340000
2.	1953	268119.7	355839.4	313253	351950
3.	1954	270160.5	365450.0	317757	355954
4.	1955	272141.5	373247.1	318200	362600

Source :—1. Report of the Indian delegation to China p. 92.
2. Land Utilisation Statistics, Directorate of Economics and Statistics.

7.7. Double cropping is primarily dependent upon the supply of water. Irrigated area in China in 1955 was only 65 million acres as against 125 million acres of pre-war level. It is quite possible that double cropped area in the pre-war period may be somewhere near 200 million acres against 100 million acres in 1955. This is also supported by Buck when he says that nearly two-thirds of the cultivated land in China grew two or more crops [16]. This would mean 180 million acres when the net sown area was 272 million acres.

Some Disadvantages

1. Some of the disadvantages, as noted below, from which Chinese agriculture suffered are however, also significant.

1. Animal power and manpower was the main motive power for agriculture and the mechanical power was very small. With the increase of multiple crop area, the introduction of intensive cultivation and the development of side occupations, shortage of animal power and manpower was felt in many areas, parlicularly during the busy seasons.

2. The economic foundation of agriculture was weak. Labour productivity of agriculture was low. Accumulation of fund for enlarging reproduction was slow and the ability to buy machinery and means of production limited. Labour power still constituted the main part of agricultural investments.

3. Cultural level of China's peasants was low and their scientific and technical knowledge was lacking. They were not experienced in applying machinery, new types of farm tools, chemical fertilisers and insecticides. Further they were incapable of repairing the machines. The removal of all or any of these hindrances which may not be a very difficult problem could help increase agricultural productivity which was already at a very high level.

Pre-war agricultural productivity

9.1 With as much as 46 percent of her area equipped with irrigation facilities and some more having an assured supply of water and an efficient use of organic manures, there is no wonder if China could reap very rich harvests.

9.2 Besides much of initiative shown by the Chinese cultivators, nature has also placed him in a very advantageous position. There are large areas which under the pains-taking care of the Chinese farmers, have a high natural or acquired fertility, or both. The other significant fact is that the vast majority of the people are concentrated in the valleys and flood plains of great rivers.

9.3 Again, in about 94 percent of her cultivated area nature had provided three broad types of soils-all of them rich in nitrogen and humus (organic matter) and containing iron, aluminium or calcium. The broad three types of soils in India, on the other hand are deficient in nitrogen and humus. [17]

9.4 Data with regard to agricultural production in pre-war China is most unreliable. One is the official source. Table below gives the area, production and yield of various crops during 1931–37 according to Chinese official sources.

Table 6: Area, production and yield of principal crops in China during 1931–37.

Crops	Area (000 acre)	Production (000 tons)	Yield (lbs.per acre
Paddy	48796	49210	2259
Wheat	50416	21652	952
Corn	16132	8858	1230
Kaoliang	12659	6889	1259
Millet	13845	6496	1051
Roots & Tubers	6374	20078	7056
	148222	113183	
Soyabeams	—	—	1038
Vegetables & fruits	—	22242	—
Oilseeds and fats	—	7480	—
Meat	—	5118	—

15. Ti Li Chin Shih, Changes in Agricultural Geography China, Georgraphical knowledge January, 1958.

16. Buck, op. cit. p. 11.

17. The Eastern Economist; Annual No. 1957.

1.	2.	3.
Sugar	—	3641
Fish	—	1082
Cotton	—	787
	—	629
Eggs	—	7480

Source: T. N. Shen "Agricultural Resources of China"

* Area has been worked out from columns 3 and 4 which were available.

9.5 As pointed out by Buck, this data has been grossly under-estimated. Land owners would often evade taxes by misrepresenting their area. Actual land surveys conducted by him revealed that the reported cultivated area in several heiens differed from the actual by as much as one third. The position with regard to yield and production may be still worse.

9.6 Buck himself has formulated some estimates of the yield per acre in respect of several crops. Besides this he gives an interesting picture of most frequent yields per acres of crops occuring on 20 percent or more farms for each locality surveyed. The table below summarises the position as given by him.

Table 7 :—Yield of main food crops in China pre-war.

(in the per acres)

Crops	Most frequent yield 1929–33	Average yields
Rice	2932–2885	4020
Wheat	949–1069	960
Corn	1164	1960
Kaoling	1127	—
Millet	1038	1140*
Irish potatoes	5144	5220
Soyabeams	2234	—
Cotton lint	—	370

Source :—Buck, op. cit, pp. 224–26.

9.7 Still higher yields are reported by the comprehensive survey of Fei and Chang in four of the Chinese villages. Table below shows the results obtained by them.

* Barley only.

Table 8 : Yield of rice in some villages in China.

(in lbs.)

Village	Average rice yield per acre	Rice yield per house-hold from the farm under operation
Lutsun	8000	10640
Yitsiun	4800	5467
Yutsun	6933	5333
Kiangta'un	5333	6880

Source : Earth Bound China, Hsias-Tung Fei and Chih-I Chang p. 298

9.8 Buck has not tried to estimate the total production of foodgrain in China. Nor has he given the average yield for all the foodgrains. There is, however, another estimate made by Ou pao-San. He placed the total production of foodgrains in China for the year 1933 at 243 million tons [18]. Table below gives the break down into various commodities, as shown by Wu [19].

Table 9 : Production of foodgrains in China 1933.

(In thousand metric/ton)

Commodities	Production.
Rice	93713
Wheat	26542
Corn	16600
Kaoling	12415
Millet	11497
Soyabeans	10732
Tubers	49847
Others	12280

Source : Ou Pao-San, China's National Income 1933 Nanking, 1947.

9.10 Soyabeans these days are excluded from foodgrains. The balance left would, therefore, be of the order of 233 million tons, if it is to be compared with the present day figures [20]. Similarly

18. China's National Income. Quoted by Yuon-Li, Wu-An Economic Survey of Communist China, p. 164. The total of the figures given in the table comes to 233 million tons. This may be due to some printing error.

19. ibid., p. 189.

20. There is also one more point to be noted about tubers. Irish potatoes are included in current statistics as grains, but were excluded in the pre-communist data. Again Chinese Statisticians now convert potatoes into foodgrains at the rate of four to one, that is, four tons of potatoes are counted as one ton of foodgrains. No such conversion was employed during the Nationalist period. (Chao, Kun-Chun, op. cit. p. 5.

the yield of cotton has been estimated at 242 kilograms of lint per hectores.[21]

9.11 It may be very difficult to say with certainty anything about the actual production of various agricultural crops in China during the pre-war period. But the intensive type of cultivation that was being practised there leaves little room for doubt that official figures must have been grossly underestimated. No wonder if the actual production level, was somewhere near Pao San's estimates or even higher.

Conclusion

10.1 If the scattered information as given in the last few pages has any meaning, it comes out clearly that China is not different from any other part of the world with regard to agriculture. The very cultivators who produced 4800 lbs of paddy or 1280 lbs of coarse grains in the year 1958, had been getting yields quite near to these figures 20 years earlier. The case of tea would be all the more interesting in this connection. According to New China News Agency. (March 16, 1959), China's highest tea crop of 225000 tons was produced in 1932. Output dropped to 41,000 in 1949. It rose to 111,500 tons in 1957 and had not reached the pre-war level in 1958, when, the production was hardly 141000 tons.

21. Wu, op. cit. p. 180.

10.2 The level achieved by China, even otherwise, is nothing extraordinary when compared with other countries which have efficient agricultural practices.

10.3 We must add that the object of the paper is not to minimise the achievements of communist China. If they had succeeded in touching their pre-war levels of agricultural production, they would have really done a wonderful job to harness and marshall their latent resources in such a short time of one year. But the latest reports from China indicate that the authorities there have revised their 1958 production targets. The production of food grains is said to be only 250 million tons as against 375 million tons originally announced. If so, China has yet to travel a long distance to catch up with her pre-war level of production.

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